

The *Hierococcyx fugax*, Hodgson's Hawk Cuckoo, complex

by Ben F. King

Received 31 January 2001

All four forms of the *Hierococcyx fugax* species complex, *H. (f.) hyperythrus* (Gould), *H. (f.) nasicolor* (Blyth), *H. (f.) pectoralis*, Cabanis and Heine, and *H. (f.) fugax* (Horsfield), were originally described as separate species. Peters (1940) lumped them all into a single species, *H. fugax*, and that view has generally been followed ever since, including Sibley & Monroe (1990) and Howard & Moore (1991). Sibley & Monroe (1993) even synonymized *nasicolor* with *fugax*. However, Payne (1997) split *H. pectoralis* from the *H. fugax* species complex on the basis of its song, which differs from the other three forms.

Recent field work and tape recording have shown that the group has three distinct song types: (1) *hyperythrus*, (2) *pectoralis*, and (3) *fugax/nasicolor*, suggesting a strong basis for also splitting *hyperythrus* from *fugax*. Study of specimens shows that the adult plumages of *fugax* and *nasicolor* are quite different, indicating that, despite sharing similar songs, the current treatment as a single species needs to be re-evaluated.

The genus *Hierococcyx* is herein used for the Asian group of *Cuculus* cuckoos known as hawk-cuckoos. The hawk-cuckoos differ markedly in their broader, more rounded wings, which in flight lend the birds a remarkably *Accipiter*-like appearance, which is close enough to regularly lead to misidentification of these cuckoos as hawks. Further, their plumages more closely resemble the patterns of *Accipiter* spp., resemblances that are strong enough to suggest a case for mimicry. Their songs tend to be more shrill than the remaining *Cuculus* cuckoos, which lack the repetition of their songs to a crescendo.

Voice

Hierococcyx hawk-cuckoos have two kinds of vocalizations, song and "long call." The three song types are as follows (Fig. 1):

- (1) *H. hyperythrus* utters a *weeweepeeit* or *weeweepeeweit*.
- (2) *H. pectoralis* utters a *wee-wee-wee-tee-too* or *wee-wee-wee-tee-tee-too* or *wee-wee-wee-tee-too-too*.
- (3) Both *H. nasicolor* and *H. fugax* utter a *fee-weet* or *wee-weet* (or *gee-whiz* of some authors).

All regularly repeat their loud, shrill, whistled songs in a series, each subsequent song sounding a little more frantic, reaching a sort of crescendo, and then taking a short break before beginning again.

The songs of both *fugax* and *nasicolor* on the sonograms appear to vary in frequency. Further tape recordings are needed to ascertain if this is due to taking the

individual songs from different parts of the call sequence, or actual individual or population variation.

Although no quantitative analysis of sonograms has been undertaken, these songs appear to be universal for each form. This is based on my experience of song as follows: *hyperythrus* in Heilongjiang Province of northeastern China and Japan; *pectoralis* at several localities in Luzon, Cebu, Negros, and Mindanao in the Philippines; *nisicolor* in Nepal, Bhutan, Yunnan and Vietnam; and *fugax* in Peninsular Malaysia, Sumatra and Borneo.

During the courtship/breeding season, song of these hawk-cuckoos is heard at all times of day or night. The stereotyped nature of the calls over large geographical areas and constant calling suggest strong selective pressure for maintenance of the particular song.

Each of the four forms has a long call. The long call is uttered much less frequently than the song and its function is unknown. Other cuckoos of the genera *Hierococcyx* and *Cuculus* have similar long calls and other cuckoos of the genera *Cacomantis* and *Surniculus* have what appear to be analogous long calls. *H. fugax* forms often appear somewhat agitated when using the long call, but this is not always the case.

The long calls of the four forms are more variable than the song and may or may not show consistent differences. More recordings are needed to assess this. Each of these calls is a loud, shrill whistle, rising in pitch and sounding increasingly frantic, reaching a crescendo, then tailing off.

- (1) *H. (f.) hyperythrus* can be syllabicated as follows: *weeteetitditdiditditdit tititititititi*.
- (2) *H. (f.) pectoralis*: *weetaweetaweeetaweetaweeetaweetaweeetaweetaweeetataotootootootootoo too*.
- (3) *H. (f.) nisicolor*: *witititititititititititi-ti ti*.
- (4) *H. (f.) fugax*: *wadawadawadawadawadeequeedeedeedeedeeteetototototo-to-to to*.

Immature (first basic) plumage

The immature (first basic of Humphrey & Parkes 1951) plumages of the four forms are much alike. Head, neck, and chin and sides of throat slaty-grey, tinged brown, with a whitish band separating the grey of chin and sides of throat, often with a partial or complete whitish band around hindneck. Rest of upperparts of body, primaries and secondaries blackish-brown with narrow dark rufous bars, the rufous barring often less conspicuous on the back (the rufous barring is lacking or faint on the back, upper wing coverts and tertiaries of *hyperythrus*). There is often a largely white tertiary. Tail is brownish-grey, often suffused with rufous, with a broad subterminal black band, a narrow rufous tip and two or three visible narrow blackish bands. Throat, breast and belly buffy white, with blackish brown streaks, often with some rusty blotching. Under tail coverts buffy white.

Some specimens are intermediate between immature (first basic) and adult (definitive basic) plumage suggesting a gradual, and possibly protracted transition.

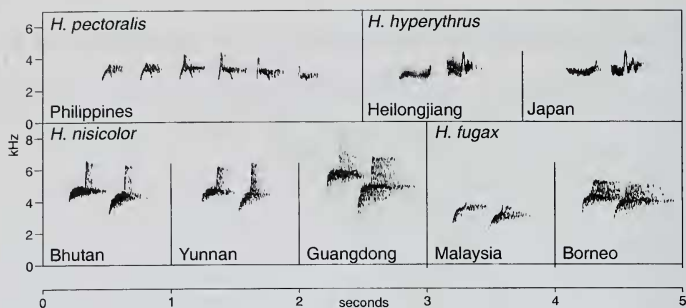


Fig 1. Songs of the four forms of the *Hierococcyx fugax* complex. All are loud shrill whistles. The songs of *nicator* and *fugax* are nearly identical while those of *pectoralis* and *hyperythrus* are quite different in structure. The Malaysian *H. fugax* recording was supplied by the Library of Natural Sounds at the Laboratory of Ornithology at Cornell University; Guangdong *H. nicator* by M.C. Michener; Japan *H. hyperythrus* from a commercial tape recording by NHK. The remaining recordings were made by Ben King and will eventually be on deposit at the Library of Natural Sounds at Cornell University.

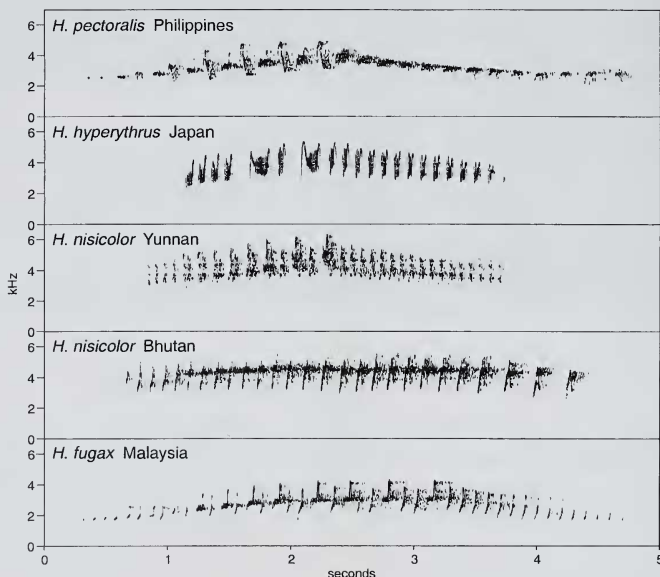


Fig 2. Long calls of the four forms of the *Hierococcyx fugax* complex. All are loud, shrill whistles, rising in pitch and sounding increasingly frantic, reaching a crescendo, then tailing off. This call's function is unknown. The long calls are more variable than the songs and it is not known if there are consistent differences between taxa. The Malaysian *H. fugax* recording was supplied by the Library of Natural Sounds at the Laboratory of Ornithology at Cornell University; Japan *H. hyperythrus* from a commercial tape recording by NHK. The remaining recordings were made by Ben King and will eventually be on deposit at the Library of Natural Sounds at Cornell University.

There were not enough specimens at AMNH to describe the juvenile (juvenal) plumages.

Adult (definitive basic) plumage

Adult (definitive basic) plumages of the four forms have slaty-grey head and upperparts with blackish primaries, usually with one of the shorter tertiaries pale grey to whitish, forming two pale spots. (Some *fugax* have a complete or partial white collar around the base of the hindneck.) The tail is brownish grey with two or three visible narrow blackish bands, a broad subterminal blackish band and a narrow rufous tip.

The chin and sides of the throat are slaty-grey (concolourous with the head), with an intervening white or whitish band, starting from the rear edge of the mandible and running into the pale lower throat. This white whisker mark sets off the grey extending down the sides of the throat and gives the birds a falcon-like (e.g. Peregrine *Falco peregrinus*) head pattern. This is most pronounced in *hyperythrus* but readily noticeable in the other three forms.

In *hyperythrus*, *pectoralis* and *nisicolor*, the throat is whitish, usually with a rusty or greyish tinge. The breast, upper belly and flanks are rufous, darkest in *pectoralis*, paler in *hyperythrus*. The breast of *nisicolor* has vague grey streaks, and the breast of *pectoralis* has faint grey shaft streaks. The centre of the belly and under-tail coverts are white.

In striking contrast, the underparts of *fugax* are entirely buffy white (except for the grey on the chin and sides of throat), with narrow blackish-brown streaks on the lower throat, breast, upper belly and flanks. Some individuals have some rusty splotches on the upper breast. Thus in *fugax*, the adult plumage is a modified immature plumage rather than the fully different adult plumage of the other three forms.

The wing lining and axillaries of *nisicolor* are buff to rusty buff with some blackish brown markings, while these areas on the other three forms are unmarked (or very sparsely marked) buff to rusty buff (but axillaries rufous, as breast, in *pectoralis*). The pale bands on the underside of the primaries tend to be broader in *fugax* than in the other three forms.

It should be noted that while Chasen (1939) accurately described the plumages of *fugax* and *nisicolor* and their differences, Wells (1999) erroneously described a subadult (intermediate basic) plumage of *fugax* as the adult (definitive basic) plumage.

Morphometrics

The migratory forms *hyperythrus* and *nisicolor* have more pointed wings than the resident *pectoralis* and *fugax* (Table 1). *H. hyperythrus* has distinctly longer wings and tail than the other three, while *nisicolor* has somewhat longer wings than *fugax*. The bill of *fugax* is noticeably longer and more robust than that of any of the other three forms.

Range

The known breeding ranges of the four forms are allopatric.

H. hyperythrus breeds from southern Amurland (Vaurie 1965 and Dementiev *et al.* 1966) in southeastern Siberia south to northeastern China (south to Hebei Province, Cheng 1987), and Honshu in Japan. Winters in Borneo and Philippines (although Kennedy *et al.* 2000, said they have been unable to substantiate its presence in the Philippines), rarely to Sulawesi and Buru in Indonesia. Migrant Eastern China.

H. pectoralis is resident in the Philippines.

H. nasicolor breeds in the lower Himalayas from Nepal east to southern China (Sichuan and southern Jiangsu Provinces south). Himalayan birds are apparently altitudinal migrants, wintering at lower altitudes nearby (but possibly migrating elsewhere, Ali & Ripley 1981), while Chinese breeders apparently all leave China in winter. Wintering birds are found in Malaya (Peninsular Malaysia), Sumatra, Borneo and Java.

The situation in mainland South-East Asia is much less clear. Smythies (1953) stated that *nasicolor* is resident in the plains and Karen Hills of southern Burma, the Southern Shan States and Tenasserim. Robson (2000) listed *nasicolor* as resident (subject to some movements) in Thailand (except Central), North and Central Laos, and West Tonkin and central Annam in Vietnam. While *nasicolor* certainly breeds in parts of mainland South-East Asia (the author has heard it in central Annam and P. Round (pers. comm.) has heard it in several areas of Thailand; these are mostly presumed identifications since the birds were not seen and only *nasicolor* is known to be present), this form's status needs re-evaluation. It seems possible that it is merely a breeding, migrant or wintering bird in some of those areas where it is currently thought to be resident.

There is no proof that *H. nasicolor* is actually resident anywhere in South-East Asia. Since calling is entirely restricted to the courting/breeding season in this species, a calling bird is reasonable presumptive evidence of breeding. However, there appears to be no way to distinguish a local breeding bird from a migrant outside the breeding season. Further, their quiet, retiring nature and uncommon status result in few observations.

H. fugax is resident in southern Tenasserim, southern Peninsular Thailand, Malaya (Peninsular Malaysia), Sumatra and Borneo, and some of their satellite islands.

While breeding sympatry between *nasicolor* and *fugax* is not known, with *fugax* known to occur and likely resident in South Tenasserim and *nasicolor* known to occur in Tenasserim, the possibility exists. Further fieldwork is needed to resolve this.

Discussion

Payne (1997) split *H. pectoralis* from the *fugax* group, based largely on the different song of *H. pectoralis*. He was unaware that the song of *H. hyperthyrus* is also

TABLE 1

Measurements (mm) of specimens of the four forms of the *Hierococcyx fugax* complex. Note the long bill of *fugax*, the long wings and tail of *hyperythrus*, and the more pointed wings of the migratory *hyperythrus* and *nisicolor*. All the specimens are housed in the American Museum of Natural History in New York. S.d.=standard deviation.

	<i>H. hyperythrus</i> (5 specimens)	<i>H. pectoralis</i> (7 specimens)	<i>H. nisicolor</i> (7 specimens)	<i>H. fugax</i> (8 specimens)
Culmen (from skull), mean (range), s.d.	26.8 (25.2-27.5) 1.07	25.6 (24.2-27.3), 1.03	25.8 (24.7-27.1), 0.85	29.2 (28.1-30.4), 0.78
Wing (flattened), mean (range), s.d.	202.1 (184.9-211.0), 11.01	172.6 (167.5-179.6), 4.24	177.0 (164.9-181.9), 6.64	173.8 (166.6-178.1), 4.18
Tail, mean (range), s.d.	142.8 (138.8-148.0), 3.65	129.1 (125.5-135.1), 3.53	127.4 (122.4-135.7), 4.51	130.4 (124.9-135.3), 3.03
Longest primary #	8	7-8	8	8-7
Second longest primary—	7 (9 once),	7 (8 twice),	7,	8 (7 thrice),
Mean distance from tip (range)	4.8 (1.7-8.2)	3.1 (1.6-4.2)	5.1 (0.9-8.6)	1.9 (0.4-3.8)
Third longest primary—	9 (7 once),	6 (9 once),	9 (6 once),	6 (9 once),
Mean distance from tip (range)	14.4 (12.5-15.5)	7.4 (5.1-12.4)	13.1 (10.4-19.0)	8.0 (7.1-16.8)
Fourth longest primary—	6,	9 (6 once),	6 (9 once),	9 (6 once, 5 once)
Mean distance from tip (range)	20.7 (14.5-32.2)	13.9 (12.5-15.4)	17.6 (12.1-22.2)	14.7 (12.1-18.1)
Fifth longest primary—	5,	5,	5,	5 (9 once)
Mean distance from tip (range)	35.8 (28.1-42.3)	19.4 (16.1-23.8)	30.1 (23.7-35.1)	20.6 (18.8-22.5)

different. He stated, "If the songs are the same, then the populations are likely to be conspecific—if the songs are different, then the populations are likely to represent distinct species. If the populations differ both in morphology and song, then it is very probable that the cuckoos involved are different species."

H. hyperythrus and *H. pectoralis* are readily distinguished from each other and from *H. nisicolor* and *H. fugax* by their distinct songs. It would be highly unusual for conspecific cuckoos to have different songs. Further, *hyperythrus* is a highly migratory form with much longer wings and tail, and a much more pointed wing than any of the other three forms. Thus we have a clear case for treating *hyperythrus* and *pectoralis* as separate species.

While the song of *nisicolor* is identical to that of *fugax*, their adult plumages are quite distinct, the adult plumage of *nisicolor* being completely different from their similar immature plumages, while that of *fugax* is a modified immature plumage. Neither breeding sympatry nor hybrids have been recorded between *nisicolor* and *fugax*. *H. nisicolor* is migratory (at least some populations) with a longer more pointed wing, and a shorter, less robust bill, than *fugax*, which is resident. Thus adult *fugax* with its very different plumage and longer bill is the most distinct of the four forms here considered. It is concluded that because the morphological differences between

fugax and *nisicolor* are so pronounced, they are best treated as separate species in spite of the fact that their songs are identical.

The recommended English names for the four species are: *H. hyperythrus*, Northern Hawk-Cuckoo; *H. pectoralis*, Philippine Hawk-Cuckoo; *H. nisicolor*, Hodgson's Hawk-Cuckoo; *H. fugax*, Malaysian Hawk-Cuckoo.

With its combination of slaty grey upperparts and streaked underparts, adult *H. fugax* can be distinguished in the field from all the other forms of the *H. fugax* complex. However, except for song and range, field identification of adults of the other three species and the immatures of all four species is quite difficult.

Acknowledgements

Jeff Groth prepared the sonagrams. I wish to thank John Fitzpatrick and Greg Budney of the Library of Natural Sounds at the Laboratory of Ornithology of Cornell University for the use of tape recording equipment. Mr. Tsuruhiko Kabaya provided a second identical tape of *hyperythrus* from Japan. Reviewer David Wells provided a useful critique. Personal communication with Robert Payne was very helpful.

References:

- Ali, S. & Ripley, S.D. 1981. *Handbook of the birds of India and Pakistan: together with those of Bangladesh, Nepal, Bhutan, and Ceylon. Vol. 3.* Oxford Univ. Press, London.
- Chasen, F.N. 1939. *The birds of the Malay Peninsula: a general account of the birds inhabiting the region from the Isthmus of Kra to Singapore with the adjacent islands. Vol. IV: The birds of the low-country jungle and scrub.* Witherby, London.
- Cheng, Tso-hsin. 1987. *A synopsis of the avifauna of China.* Scientific Press, Beijing.
- Dementiev, G.P., Gladkov, N.A., Ptushenko, E.S., Spangenberg, E.P. & Sudlilovskaya, A.M. 1966. *Birds of the Soviet Union. Vol. 1.* Israel Program for Scientific Translation.
- Grimmett, R. Inskipp, C., and Inskipp, T. 1999. *A guide to the birds of India, Pakistan, Nepal, Bangladesh, Bhutan, Sri Lanka, and the Maldives.* Princeton Univ. Press, Princeton.
- Howard, R. & Moore, A. 1991. *A complete checklist of the birds of the world.* Academic Press, London.
- Humphrey, P.S. & Parkes, K.C. 1959. An approach to the study of molts and plumages. *Auk* 76: 1-31.
- Kennedy, R.S., Gonzales, P.C., Dickinson, E.C., Miranda, Jr., H.C. & Fisher, T.H. 2000. *A guide to the birds of the Philippines.* Oxford Univ. Press, London.
- Payne, R.B. 1997. Cuckoos Cuculidae. In *Handbook of the birds of the world*, Vol. 4 (eds. del Hoyo, J., Elliott, A., and Sargatal, J.). Lynx Edicions, Barcelona, pp. 508-607.
- Peters, J.L. 1940. *Check-list of the birds of the world.* Harvard Univ. Press, Cambridge, Mass.
- Robson, C. 2000. *A field guide to the birds of South-East Asia.* New Holland Publishers (U.K.) Ltd., London.
- Sibley, C.G. & Monroe, Jr., B.L. 1990. *Distribution and taxonomy of birds of the world.* Yale Univ. Press, New Haven.
- Sibley, C.G. & Monroe, Jr., B.L. 1993. *A supplement to distribution and taxonomy of birds of the world.* Yale Univ. Press, New Haven.
- Smythies, B.E. 1953. *The birds of Burma.* Oliver & Boyd, London.
- Vaurie, C. 1965. *The birds of the Palearctic fauna: Non-Passeriformes.* Witherby, London.
- Wells, D.R. 1999. *The birds of the Thai-Malay Peninsula.* Academic Press, New York.

Address: Ben King, Ornithology Dept., American Museum of Natural History, Central Park West at 79th St., New York, NY 10034. USA.